The Pale Horse

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[2009]

APPENDIX A: Student Handouts

The Pale Horse

10th February 2009

Mrs Maria Barberi was found dead at
25 Thurmaston Road, Beauport
by her daughter, Brigitte

You are part of the investigation team.
What evidence do you want to collect?

The Pale Horse

SCIENTIFIC SKILLS

- forensic science
- chemical analysis
- physical analysis
- toxicology
- forensic pathology
- selecting analytical methods

TRANSFERABLE SKILLS

- working with others
- communication
- decision making
- analytical/critical thinking
- independent learning

What you need to do

- Consider what samples to take
- Decide suitable methods of analysis
- Identify a cause of death
- Decide what further evidence is required
- Consider who the likely suspects are

1

Initial Crime Report
Dated: 10/02/09
Beauport Police Station, Midshires Police

Case No.: 10-02-0071 **Date:** 10/02/09

Offence: Sudden suspicious death of Mrs Maria Barberi

DOB: 13/12/1961

Location: 25 Thurmaston Road, Beauport, front room

Means: Apparently from a blow to the head

Weapon: Unknown

Details:

I arrived at 25 Thurmaston Road at about 16:25 to find Miss Brigitte Barberi who had found her mother dead. Brigitte was in a very distressed state.

I was able to ascertain that Brigitte had left for school at 8:00 and did not return until 16:05, finding it strange that her mother had not met her in the car at the school gate. She found her mother lying in the front room and called the ambulance about 16:10.

The ambulance had arrived about the same time as me. The paramedics stated that she was dead so I called the Police Surgeon to pronounce death and advised the station that CID needed to send an officer.

I secured the scene. Awaited the arrival of the detectives. The case was turned over to Detective Mark Holme, who instructed me to interview the neighbours.

Signed: Chris Rose **Dated:** 10/2/01

PC Chris Rose

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Initial CID Report | Dated: 10/2/09

Case No.: 10-02-0071 **Report No.:** MH1

Offence: Sudden suspicious death of Mrs Maria Barberi

Location: 25 Thurmaston Road, Beauport, Front Room

Details:

At 16:45 on 10th February 2009, I went to 25 Thurmaston Road, Beauport in response to the request of PC Rose for assistance over a suspected sudden suspicious death.

The dead body, [later formally identified by Mr. Martin Barberi (her husband) as Mrs Maria Barberi], was lying in the front room. The body was lying on its front, facing north, with the top of her head-pointing west. The severe head wound was only visible upon turning the body over. She was wearing a black T-shirt, and black three-quarter-length skirt with purple flowers.

On the floor, just by her left hand were a glass and a cordless telephone. At 17:00, Dr. Steven Middleton (Police Surgeon) pronounced death. He stated that it was unlikely to be death by natural causes. Upon turning the body, a head wound was apparent to her right rear of the skull. This seemed to be from a blunt object. Blood had congealed in the hair. I then directed Annie Barnard (the SOCO) to make a full investigation and treat the area as a crime scene.

Signed: Mark Holme **Dated:** 10/2/01

Detective Mark Holme

Identity the person who called the police, and the person who last saw her alive.
What was the approximate time of death?

Crime Scene Photos

3

Door to Door Interviews (1)
Dated: 10/02/09
Beauport Police Station, Midshires Police

Case No.: 10-02-0071 **Interview:** 1 & 2

Location: 27 Thurmaston Road, Beauport

Details:

I interviewed Mr Tim Dollar of 27 Thurmaston Road who I had cautioned the previous year for a disturbance between him and the Barberi's over the placing of a new fence. He said, *"They kept much to themselves. They're OK. The damn dog was a nuisance barking in the small hours. Been worse after her marrying the toy boy. I liked Simon Shaw [Maria's ex husband] although he was away at sea a lot. Certainly kept Maria on a short leash. Knew how to discipline her, if you know what I mean."*

Mrs. Helen Dollar of the above address said, *"I am worried about the daughter with all the shouting that was going on in the last few weeks. Some to do about an inheritance. I am pleased things have quietened down between us. Neighbours again. A few weeks ago, my husband [Tim Dollar] gave them [the Barberi's] a couple of bottles of wine to show there were no hard feelings."*

Signed: Chris Rose **Dated:** 10/2/01

PC Chris Rose

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Door to Door Interviews (2)
Dated: 10/02/09
Beauport Police Station, Midshires Police

Case No.: 10-02-0071 **Interview:** 3

Location: 23 Thurmaston Road, Beauport

Details:

Mrs Kathy Stevens (in her late 60s) stated *"Maria and her lovely daughter Brigitte are smashing. She [Maria] was still getting over the accidental death of her father a couple of years ago from Tidstall Farm. Then with the sudden death of her mother, Betty [Moore], a month or so ago. She [Maria] had visited her every Thursday until she died. Me thinks the Senior Hand ran the farm. Being the only daughter, she [Maria] would have enjoyed her trip to Australia, she had always talked about. Poor lass."*

She also stated, *"After going to court over the silly boundary dispute, things have been quiet between Mr Barberi and Mr Dollar thankfully. They're not top draw you know. Wasn't Maria back in court again over visiting rights from her abusive ex-husband [Simon Shaw]? Never took to him. At least Maria's accidents have not re-occurred since marrying Martin [Barberi]. That is about all good I can say of him."*

Signed: Chris Rose **Dated:** 10/2/01

PC Chris Rose

Consider whether this is a natural or suspicious death?

Consider what physical evidence you would collect?

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SOCO Report
Midshires Police

Dated: 10/02/09

Case No.: 10-02-0071 **Report:** SOCO1

Offence: Sudden suspicious death of Mrs Maria Barberi

Location: 25 Thurmaston Road, Beauport, Front Room

Details:

This officer was called to the above address in response to the request of Det. Mark Holme for a full crime-scene investigation. He told me that the body, Maria Barberi, was in the front room.

The body was a white female, about 40 years old, lying partly on the right side on a wooden laminated floor. Body was facing north, with the top of the head pointing west. The top of her head was 30 cm south of the north wall and 120 cm west of the east wall.

With the aid of Det. Mark Holme, I made complete measurements and made a sketch of the front room. I searched the entire scene. There was no evidence of forced entry. The following items of evidence were collected:

10-02-0071-B1 Glass from floor containing a straw coloured liquid.

10-02-0071-B2 Part full bottle of Chateau de la Graville 1999 (white)

10-02-0071-B3 Carbon monoxide detector.

10-02-0071-B4 White crystalline powder from the table in front room.

10-02-0071-B5 Medicine bottle.

10-02-0071-B6 Cordless telephone

Then marked the body with chalk and rope before the body was taken away to the morgue.

Then a search of the rest of the house was undertaken.

In the kitchen, the washing up certainly had not been done since the previous night but I noted that the dog bowls were clean. Under the sink was 1 litre bottle of bleach, 200 ml of oven cleaner, boot polish and brushes, 1 litre bottle of acid descaler (phosphoric acid), 500 ml bottle of washing-up liquid, white spirit, and brass cleaning fluid.

The bathroom was clean and tidy. A cabinet with a number of medicines contained within. Also suspicious dark red stain in the kitchen sink was found. A sample was taken.

10-02-0071-B7 Scraping of suspected blood sample from sink.

10-02-0071-B8 List of contents of the drug cabinet.

10-02-0071-B9 Sample from the staining on wall in front room.

Fingerprinting was undertaken.

- Front room - Polished wooden floor gave no usable prints.
- Kitchen - Some smudged prints found.
- Bathroom - No clear fingerprints developed.

Uniform officers have sealed the front room.

Signed: Annie Barnard **Dated:** 10/2/01

Officer Annie Barnard

What do you want to examine or analyse?
Suggest the appropriate method?

You are allowed to submit 6 requests.

Midshire Police Force

Evidence request form 1

(physical evidence)

Request submitted by Investigation Group ……..:

Evidence No.	Evidence	What are you looking for?	Method of Analysis
e.g. 10-02-0071-B9	Sample from the staining on wall in front room.	Identity of the stain?	Drift FT-IR
1.			
2.			
3.			
4.			
5.			
6.			

NOTE that the stain on the wall was not blood but paint.

Who do you suspect at the moment? …….

Signed: _____ _____

_____ _____

_____ _____

Dated: _____

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	Supplementary CID Report 1	Dated: 11/2/09

Case No.: 10-02-0071 **Report No.:** MH2

Offence: Sudden suspicious death of Mrs Maria Barberi

Details:

Dr. Steven Middleton (the Police Surgeon) was uncertain of the time of death but probably within the last 5 hours but will know more after the Post Mortem.

I then accompanied the body to the morgue where I observed the pathologist, Mr. Peter Crippin, perform the post mortem procedure. He stated that he did not think the blow to the head had killed her and it may have been poisoning.

At 21:05, I returned to the crime scene to see if Mr Martin Barberi (the husband) had returned.

He had already returned home at 18:46 [according to PC Rose] to find the police in his house. Martin informed me that on the 10th February, he had left at 06:30 that morning to go fishing on the upper reaches of the River Coley and had not caught anything. Martin had sent his daughter, Brigitte, to stay with her grandparents [Mr and Mrs A.F. Barberi] for the night. She was hysterical and also rather poorly.

Signed: Mark Holme **Dated:** 11/2/01

Detective Mark Holme

Consider the cause of death and the potential suspect(s).

NOTES

Witness Card

Mr. Martin Barberi
Occupation: Public Health Inspector
Blood Group O
Age: 30

Witness Card

DECEASED
5′ 6″
(168cm)

Mrs. Maria Barberi
Occupation: A&E Nurse at Beauport General Hospital
Blood Group A
Age: 39

Witness Card

Miss Brigitte Barberi
Occupation: Schoolgirl
Blood Group AB
Age: 13

Witness Card

Mr Simon Shaw (ex-husband)
Occupation: Seaman (Ex Navy)
Blood Group B
Age: 38

Witness Card

Mr. Tim Dollar
Occupation: Self Employed Builder
Blood Group O
Age: 42

Witness Card

Mrs. Helen Dollar
Occupation: Secretary at Titan Industries PLC (pigment manufacturer)
Blood Group A
Age: 28

Witness Card

Mrs. Kathy Stevens
Occupation: Retired Science Teacher
Blood Group O
Age: 70

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Midshire

POST MORTEM REPORT
11/02/09

Case No.:	10-02-0071		
Body:	Mrs Maria Barberi		
Gender:	**Female**		
Occupation	Nurse		
Married	Yes		
DOB:	13/12/66	**Age:**	39
Weight:	81.5 kg	**Height:**	168 cm
Cause of Death:	Probably poisoning awaiting toxicology.		
Mechanism of Death:	Renal failure and heart attack.		
Manner of Death:	Sudden, unexpected non-traumatic death. Minor head wound caused by head striking the floor or another surface. Accidental, suicide or homicide?		
Time of Death:	Before 15:00 on the 10th February 2009.		

NOTES

At 18:36 on the 10th February 2009 the post mortem was carried out on Mrs Maria Barberi. The clothes were removed from the body & retained for evidence. No stains or damage to them were observed. There was no evidence of struggle or assault found. The cadaver had dyed red hair from natural brunette with blue eyes that were clear showing no severe trauma.

Death was recent (within the last 4 hours) because rigor mortis was only evident in neck and jaw, no livor mortis (greenish-red coloration to the skin) and absence of insects / maggots. Body temperature was 33°C and still warm to touch so time of death was possibly about 15:00 but as Detective Mark Holmes noted the gas fire had been left on so could have been a number of hours earlier.

Cadaver was weighed and measured. A number of healed fractures were shown in the x-rays. The blow to the head is unlikely to have killed her and was probably dead when she struck a hard object as there was very little blood in the hair. No other bruising was evident. The hair in places easily came away in the hand.

Acute tubular necrosis caused renal failure of the kidneys. This is usually indicative of a severe infection or chemical poisoning. There is no evidence of infection and no characteristic odours. This would suggest inorganic poisoning.

The liver showed evidence of cirrhosis by its yellowish red colour. This was caused by prolonged alcohol abuse or possibly poisoning. Caused strain upon the heart and a massive heart attack ensued. Death was almost instantaneous.

Blood, hair and urine samples were taken for Toxicology.
10-02-0071-C1 Blood sample from the body.
10-02-0071-C2 Hair samples from the body.
10-02-0071-C3 Urine samples from the body.
10-02-0071-C4 Kidney from the body.
10-02-0071-C5 Sample of liver from the body.
10-02-0071-C6 Stomach contents from the body.

I would estimate that she died around midday on the 10th February. I am awaiting the Toxicology to determine cause of death.

Signed: Peter Cripin **Dated:** 11/02/01

Peter Cripin, M.D.

What samples do you want to send for toxicology? Indicate appropriate analytical methods.

You are permitted 4 requests for analysis.

Midshire Forensic Laboratory

Evidence request form 2 (toxicology)

Request submitted by Pathologist ……..:

Evidence No.	Evidence	What are you looking for?	Method of Analysis
e.g. **10-02-0071-C1**	Blood from the victim	Illicit and prescription drugs.	Solvent extraction then GC-MS
1.			
2.			
3.			
4.			

NOTE

The Toxicological Screen for the body showed there was only citalopram (Cipramil) present. This is unlikely to have contributed to death.

Who do you suspect at the moment? …….

Signed: _____ _____

_____ _____

_____ _____

Dated: _____

Typical element levels in blood, serum, urine, kidney, liver, hair and wet tissue.

Element	Blood (μg/ml)	Serum (μg/ml)	Urine (μg/ml)	Kidney (μg/g)	Liver (μg/g)	Hair (μg/g)	Organs (general) (μg/g)
Ag	0.0023			0.05	0.05		(brain 0.03)
Al	0.005	0.005	0.005				0.5 (lung 50, bone 10)
As	0.1	0.1	0.02		0.009	1	0.2
Au	0.00006	0.00008		0.003	0.002	0.06	(brain 0.00024)
Ba		0.02					0.1
Bi	0.009	0.004	0.02				0.04
Ca		100	200				99% in the skeleton as hydroxyapatite (1kg approx.) (total of 1g in plasma
Cd	0.002	0.0009	0.003	35	2	1	1 (lungs 0.2)
Co	0.009	0.0003	0.0004	0.093	0.061	0.3	<0.09
Cu	1.1	1.1	0.2	5		25	1
Fe	500	1	0.5		250	60	100 (spleen 200)
Hg	0.003	0.002	0.005	0.37*	0.07*	2	0.1 (brain 0.02*)
K	2000	200	2000				
Li		0.02	0.005				
Mg	50	20	50				100 (bone 1000)
Mn	0.091	0.009	0.09	80	2	1.5	0.2 (brain 20)
Mo	0.003	<0.005			0.2	0.2	0.02
Na		3200	2000				
Ni	0.0003	0.0003	0.002		0.05	0.2	0.2
Pb	0.15	<<0.009	0.05		0.55	20	1 (bone 20)
Pt	0.009		0.0003				
Sb	0.0005						
Se	0.09	0.09	0.03	0.8	0.3	1	0.2 (testis 0.3)
Si		5					
Sn		0.0005	0.002				0.2
Sr		0.05	0.15				1 (bone 50) 99% is in bone
Ti		0.09					(bone 0.5 and 10 lung)
Tl	0.005		0.003			0.095	0.09
U	0.0004			0.0006	0.0003		(lung 0.009 and bone 0.008)
V	0.0006	0.0007	0.005	0.003	0.0075		<0.09 (lung 0.002)
W	0.0004		0.0007			0.095	(lung 0.0095)
Zn	7	1	0.5		40		20 (cerebral spinal fluid 0.2)

- * Depending on number of amalgam fillings. These values for 10 amalgams.

[Thompson K.C. & Reynolds R.J. (1978) *Atomic Absorption, Fluorescence and Flame Emission Spectroscopy,* 2nd Edition, Charles Griffin & Co. Ltd., London
Iyengar G.V. & Iengar V. (1988), "Clinical Samples," In McKenzie H.A. & Smythe L.E., ed., *Quantitative Trace Analysis of Biological Materials,* Elsevier, Oxford, p409-417.
Seiler H.G., Sigel A. & Sigel H. (1994), *Handbook on Metals in Clinical and Analytical Chemistry,* Marcel Dekker, Inc., New York]

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Supplementary CID Report 2

Dated: 12/2/09

Case No.: 10-02-0071 **Report No.:** MH3

Details:

I visited Mr Martin Barberi on the 12th February at 18:35. He was very upset and seems to have been drinking heavily. A number of empty beer cans and some bottles of wine were on the table. His hand was trembling and had obviously not sleeping well. I called the Police Surgeon because of my concerns over his health.

Meanwhile, he recounted that he had last talked to Maria the night before she died [9/2/09] over a chicken chasseur to celebrate her inheritance with a glass or two of white wine.

Martin said that his wife had been ill for some time. She [Maria Barberi] had been to the doctor on a number of occasions and the doctor had dismissed this as food poisoning. The last time, Maria had complained of allopecia. He could not understand why he had not seen how ill she was. Martin was adamant that it was medical incompetence.

The Police Surgeon called the ambulance and he was admitted to Beauport Royal Infirmary that night.

Signed: Mark Holme **Dated:** 12/2/01

Detective Mark Holme

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Supplementary CID Report 3

Dated: 12/2/09

Case No.: 10-02-0071 **Report No.:** MH4

Details:

This was dictated to me over the phone from Beauport Royal Infirmary.

"Mr Martin Barberi was admitted to Beauport Royal Infirmary with suspected alcohol poisoning and is currently stable. A blood sample was sent to toxicology. His airway was maintained and was given oxygen and is currently on a drip to replace fluids. He had been suffering abdominal pain, vomiting and diarrhoea with some evidence of haemorrhaging. He [Martin] was delirious and had lost consciousness. Activated carbon and a purgative to clear out his system have been administered. Undergoing further blood tests. He [Martin] stated that he had not eaten very much recently and had drunk some wine and beer."

Returning to the House, I took the following as evidence from where Mr Martin Barberi was sitting and the Kitchen.

10-02-0071-H1	Half-full bottle of Chilean Cabernet Sauvignon 1998 (Red) from table.
10-02-0071-H2	Quarter full bottle of Jacob's Creek Dry Riesling 2000 (Australian White) from table.
10-02-0071-H3	Part full bottle of homemade "Gooseberry Wine 1999 T.D." from the Kitchen.
10-02-0071-H4	Sample of beer from his glass.
10-02-0071-H5	Mr Barberi's part eaten plate of food.

Signed: Mark Holme **Dated:** 12/2/01

Detective Mark Holme

Consider what caused Mr. Barberi's illness and whether he was suffering from alcohol poisoning.

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Hospital Report

Dated: 14/2/09

Case No.: 10-02-0071 **Report No.:** FMO-1

Details:

Brigitte was also admitted to Beauport Royal Infirmary on the 14th February with symptoms of acute heavy metal poisoning. Poison and source has yet to be determined. The following samples were taken at Beauport Royal Infirmary from both Mr Martin Barberi and his stepdaughter, Brigitte.

10-02-0071-S1 Blood sample from Mr Martin Barberi
10-02-0071-S2 Head hair from Mr Martin Barberi.
10-02-0071-S3 Blood sample from Miss Brigitte Barberi
10-02-0071-S4 Head hair from Miss Brigitte Barberi.

Signed: Mark Holme **Dated:** 14/2/01

Detective Mark Holme

Consider the following: -

Were any members of the Barberi family poisoned, if so how was it administered?

Who do you now suspect? What was the motive? What was the opportunity?

What further evidence do you need? Where would you find this?

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Midshires Forensic Laboratory

Samples collected for case 10-02-71

To: Det. Mark Holme

List of Evidence Collected:

10-02-0071-B1 Glass from floor containing a straw coloured liquid.
10-02-0071-B2 Part full bottle of Chateau de la Graville 1999 (white)
10-02-0071-B3 Carbon monoxide detector.
10-02-0071-B4 White crystalline powder from the table in the Front Room.
10-02-0071-B5 Empty medicine bottle.
10-02-0071-B6 Cordless Telephone.
10-02-0071-B7 Scraping of suspected blood sample from sink.
10-02-0071-B8 Contents of the drug cabinet.
10-02-0071-B9 Sample from the staining on wall in front room.

10-02-0071-C1 Blood sample from the body.
10-02-0071-C2 Hair samples from the body.
10-02-0071-C3 Urine samples from the body.
10-02-0071-C4 Kidney from the body.
10-02-0071-C5 Sample of liver from the body.
10-02-0071-C6 Stomach contents from the body.

10-02-0071-H1 Half-full bottle of Chilean Cabernet Sauvignon 1998 (Red) from table.
10-02-0071-H2 Quarter full bottle of Jacob's Creek Dry Riesling 2000 (Australian White) from the table.
10-02-0071-H3 Part full bottle of homemade "Gooseberry Wine 1999 T.D." from the Kitchen.
10-02-0071-H4 Sample of beer from his glass.
10-02-0071-H5 Mr. Barberi's part eaten plate of food.

10-02-0071-S1 Blood sample from Mr Martin Barberi
10-02-0071-S2 Head hair combing from Mr Martin Barberi.
10-02-0071-S3 Blood sample from Miss Brigitte Barberi
10-02-0071-S4 Head hair from Miss Brigitte Barberi.

Signed: S. Gough **Dated:** 18/02/01

Simon Gough, Ph.D.

Midshire Forensic Laboratory

Evidence request form 3 (additional evidence)

Request submitted by Investigating Group ……...:

Evidence No.	Evidence	What are you looking for?	Method of Analysis
1.			
2.			
3.			
4.			
5.			
6.			

Who do you suspect? …….

Signed: _____ _____

_____ _____

_____ _____

Dated: _____

Case Summary

You can only use the evidence that you have. Anything else should be clearly stated as suspicion or on the balance of probabilities. Criminal Law requires proof beyond reasonable doubt and there is still a considerable amount of doubt.

What was Mrs. Barberi's state of mind?		
Was the death of Mrs. Maria Barberi natural causes, accident, suicide, murder or yet to be established?		
What was the cause of death?		
Was poison used?		
If so what was it?		
How was this administered?		
Was the illness of Mr Martin Barberi linked to that of his wife?	Yes	No
Was the illness of Brigitte Barberi linked to that of her mother?	Yes	No
If so what did they ingest in common with Mrs. Barberi?		
What further evidence is required?		
Whom do you suspect?		
What was his / her / their motive?		
What was his / her / their opportunity?		
Could the person you suspect be cautioned on the evidence collected so far?		

NAME: _____ DATE: _____

GROUP: _____

Presentation of case 10-02-0071

The five-minute presentation and Incident Report should address at least some of the following questions.

1. What was Mrs. Barberi's state of mind?
2. Was the death of Mrs. Maria Barberi suicide, murder or yet to be established?
3. What was the cause of death?
4. Are the illnesses of Martin and Brigitte Barberi related? Could these be related to the death of Maria Barberi?
5. Who do you suspect? What was their motive? What was their opportunity?
6. Could the person you suspect be cautioned on your evidence so far analysed? What further evidence is required? Could a warrant be obtained to search for this evidence?

REMEMBER

You can only use the evidence that you have collected. Anything else should be clearly stated as suspicion or on the balance of probabilities. Criminal Law requires proof beyond reasonable doubt and there is still a considerable amount of doubt.

APPENDIX B: Initial Crime Scene Results

B1 FP	Fingerprinting request		
Evidence No.:	10-02-0071-B1 Glass from floor with golden brown residue.		
Test	Powder and fixed print then photographed.		
Prints			
Identity	Print from the left thumb of Mrs Barberi.	Print from left middle finger of Mrs Barberi.	Print from left index finger of Mrs Barberi.
Notes	Probably wine from the odour and colour. Suggest use UV-vis spectrometry for confirmation.		

B1 TLC	TLC of straw coloured liquid
Evidence No.:	10-02-0071-B1 Glass from floor with straw coloured liquid.
Test	TLC then scraping off the bands to perform FT-IR of KBr Disc
Results	Results consistent with being wine. No suspicious bands evident.
Identity	Wine with no organic impurity observed.
Notes	Only major organic impurities would be shown.

B1 GLC	GLC-FID of straw coloured liquid
Evidence No.:	10-02-0071-B1 Glass from floor with straw coloured liquid.
Test	GLC-FID
Results	Results consistent with being wine. No suspicious bands evident.
Identity	Wine with no organic impurity observed.
Notes	

B1 HPLC	HPLC of straw coloured liquid
Evidence No.:	10-02-0071-B1 Glass from floor with straw coloured liquid.
Test	HPLC-diode array
Results	Results consistent with being wine. No suspicious bands evident.
Identity	Wine with no organic impurity observed.
Notes	

B1 ICPMS	ICP-MS of liquid in wine glass		
Evidence No.:	10-02-0071-B1 Golden liquid from wine glass in living room.		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**B1** **Glass**
	51 V	6 ppb	20 ppb
	55 Mn	32 ppb	1.06 ppm
	65 Cu	7 ppb	51 ppb
	66 Zn	27 ppb	1.17 ppm
	75 As	1 ppb	20 ppb
	82 Se	4 ppb	6 ppb
	111 Cd	2 ppb	3 ppb
	118 Sn	0.483 ppm	0.446 ppm
	202 Hg	29 ppb	39 ppb
	205 Tl	0.3 ppb	0.5 ppb
	208 Pb	3 ppb	60 ppb
	238 U	0.2 ppb	<0.1 ppb
Notes			

B1	Liquid in wine glass: metals by		
Evidence No.:	10-02-0071-B1 Golden liquid from wine glass in living room.		
Test			
Results		**Blank**	**B1** **Glass**
	V	6 ppb	0.02 ppm
	Mn	0.032 ppm	1.06 ppm
	Cu	7 ppb	0.051 ppm
	Zn	0.027 ppm	1.17 ppm
	As	1 ppb	0.020 ppm
	Se	4 ppb	6 ppb
	Cd	2 ppb	3 ppb
	Sn	0.48 ppm	0.44 ppm
	Hg	0.029 ppm	0.039 ppm
	Tl	0.3 ppb	0.5 ppb
	Pb	3 ppb	0.060 ppm
	U	0.2 ppb	<0.1 ppb
Notes			

B1/B2	FT-IR request
Evidence No.:	Wine sample.
Test	FT-IR
Results	FT-IR is not a suitable method for looking at liquids with high aqueous content.
Identity	
Notes	

B2 FP	Fingerprinting request
Evidence No.:	10-02-0071-B2 Chateau de la Graville 1999 (white) bottle (part full)
Prints	Powder and fixed print then photographed.

Prints			
	Print from Mr Barberi.		Print from unknown person
Notes	The unidentified set is probably male due to their size.		

B2 TLC	TLC of wine
Evidence No.:	10-02-0071-B2 Part full bottle of Chateau de la Graville 1999 (white)
Test	TLC then scraping off the bands to perform FT-IR of KBr Disc
Results	Results consistent with being wine. No suspicious bands were evident.
Identity	Wine with no organic impurity observed.
Notes	Only major organic impurities would be shown.

B2 HPLC	HPLC of wine
Evidence No.:	10-02-0071-B2 Part full bottle of Chateau de la Graville 1999 (white)
Test	HPLC-diode array
Results	Results consistent with being wine.

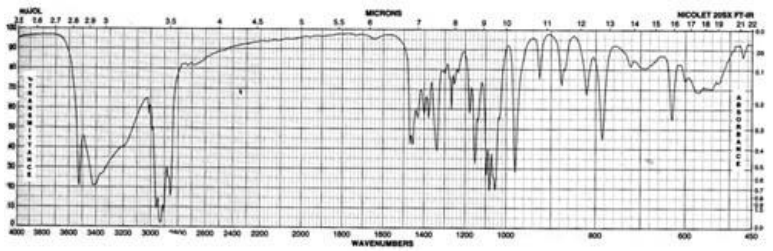
	No suspicious bands were evident.
Identity	Wine with no organic impurity observed.
Notes	

B2 ICPMS	ICP-MS of wine from living room		
Evidence No.:	10-02-0071-B2 Chateau de Graville 1999		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**B2 White Wine**
	51 V	6 ppb	20 ppb
	55 Mn	32 ppb	1.01 ppm
	65 Cu	7 ppb	51 ppb
	66 Zn	27 ppb	1.12 ppm
	75 As	1 ppb	20 ppb
	82 Se	4 ppb	6 ppb
	111 Cd	2 ppb	4 ppb
	118 Sn	0.483 ppm	0.421 ppm
	202 Hg	29 ppb	41 ppb
	205 Tl	0.3 ppb	0.6 ppb
	208 Pb	3 ppb	65 ppb
	238 U	0.2 ppb	0.1 ppb
Notes			

B2	Wine from living room: metals by		
Evidence No.:	10-02-0071-B2 Chateau de Graville 1999		
Test			
Results		**Blank**	**B2 White Wine**
	V	6 ppb	0.020 ppm
	Mn	0.032 ppm	1.01 ppm
	Cu	7 ppb	0.051 ppm
	Zn	27 ppb	1.12 ppm
	As	1 ppb	0.020 ppm
	Se	4 ppb	6 ppb
	Cd	2 ppb	4 ppb
	Sn	0.483 ppm	0.421 ppm
	Hg	0.029 ppm	0.041 ppm
	Tl	0.3 ppb	0.6 ppb
	Pb	3 ppb	0.065 ppm
	U	0.2 ppb	0.1 ppb
Notes			

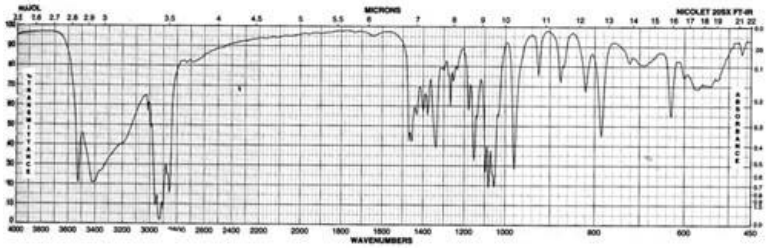
B3 FP	Fingerprinting request		
Evidence No.:	10-02-0071-B3 Carbon monoxide detector		
Prints	Latent fingerprints developed by ninhydrin		
Results			
Identity	Smudged fingerprints could not be identified.		

Notes	Did not show a brown dot in the centre so carbon monoxide levels were normal in the room.

B4 TLC	TLC then FT-IR of white powder
Evidence No.:	10-02-0071-B4 White crystalline powder from the table in the front room.
Test	TLC then scraping off the bands to perform FT-IR of KBr Disc
Results	
Identity	Only one band seen. This was ID as Fructose
Notes	Only Organic impurities would be shown.

B4 ID	Identity of white powder
Evidence No.:	10-02-0071-B4 White crystalline powder from the table in the front room.
Test	Charring test and melting point.
Results	White powder melted and a sweet smell was present on charring.
Identity	Organic compound probably pure.

Notes	Sharp mp=119-121 °C

B4 IR	FT-IR of white powder
Evidence No.:	10-02-0071-B4 White crystalline powder from the table in the front room.
Test	FT-IR of KBr Disk of unidentified powder
Results	
Identity	Fructose
Notes	Organic impurities less than 5% would not be shown.

B4 HPLC	HPLC-MS of white powder
Evidence No.:	10-02-0071-B4 White crystalline powder from the table in the front room.
Test	HPLC-MS
Results	

Identity	Only one band seen. Over 99% Fructose
Notes	Only Organic impurities would be shown.

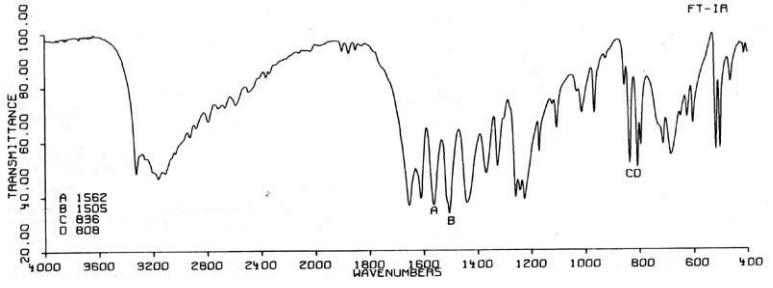
B4 NMR	NMR of white powder
Evidence No.:	10-02-0071-B4 White crystalline powder from the table in the front room.
Test	NMR
Results	NMR trace
Identity	Fructose
Notes	This is only suitable if the compound is known to be pure. Chromatography (TLC, HPLC or LC should be carried out before using NMR as ID test.

B4 ICPMS	ICP-MS of white powder		
Evidence No.:	10-02-0071-B4 White Powder from table in Front Room		
Test	Microwave acid digestion with 5 ml of nitric acid to 1g of sample then ICP-MS.		
Results		**Blank**	**B4 White Powder**

	51 V	6 ppb	73 ppb
	55 Mn	32 ppb	0.136 ppm
	65 Cu	7 ppb	91 ppb
	66 Zn	27 ppb	0.58 ppm
	75 As	1 ppb	22 ppb
	82 Se	4 ppb	21 ppb
	111 Cd	2 ppb	<2 ppb
	118 Sn	0.483 ppm	0.425 ppm
	202 Hg	29 ppb	21 ppb
	205 Tl	0.3 ppb	0.1 ppb
	208 Pb	3 ppb	5 ppb
	238 U	0.2 ppb	< 0.1 ppb
Notes			

B4	White powder: metals by		
Evidence No.:	10-02-0071-B4 White Powder from table in Front Room		
Test			
Results		**Blank**	**B4 White Powder**
	V	6 ppb	0.063 ppm
	Mn	0.032 ppm	0.101 ppm
	Cu	7 ppb	0.091 ppm
	Zn	0.027 ppm	0.034 ppm
	As	1 ppb	0.025 ppm
	Se	4 ppb	0.011 ppm
	Cd	2 ppb	5 ppb
	Sn	0.483 ppm	0.43 ppm
	Hg	0.029 ppm	0.021 ppm
	Tl	0.3 ppb	0.3 ppb
	Pb	3 ppb	6 ppb
	U	0.2 ppb	< 0.1 ppb
Notes			

B5 FP	Fingerprinting request		
Evidence No.:	10-02-0071-B5 Empty medicine bottle.		
Test	Latent fingerprints developed by ninhydrin		
Prints			
	Print from the left thumb of Mrs Barberi.		Print from right thumb of Brigitte Barberi
Notes	Label states that it is 500mg Cocodamol. Prescribed to Mr. Barberi.		

B5 IR	FT-IR of residue in medicine bottle
Evidence No.:	10-02-0071-B5 Empty medicine bottle.
Test	FT-IR of KBr Disk
Results	
Identity	Acetoaminophen
Notes	Commonly known as Paracetamol or Panadol. This is the major ingredient for Cocodamol. Prescribed to Mr Barberi.

B5 NMR	NMR of residue in medicine bottle
Evidence No.:	10-02-0071-B5 Empty medicine bottle.
Test	NMR
Results	NMR trace
Identity	Possibly Paracetamol but the trace has a large number of peaks. Obviously a mixture. Tablets are not made of pure drugs and have a large proportion of filler (titanium dioxide, gelatin etc..)
Notes	This is only suitable if the compound is known to be pure. Chromatography (TLC, HPLC or LC should be carried out before using NMR as ID test.

B5	Contents of medicine bottle: metals by
Evidence No.:	10-02-0071-B4 Contents of the Medicine Bottle
Test	
Results	

	Blank ppm w/v	B5 ppm w/v
V	0.006	0.063
Mn	0.032	0.101
Cu	0.007	0.091
Zn	0.027	0.034
As	0.001	0.025
Se	0.004	0.011
Cd	0.002	0.005
Sn	0.483	0.43
Hg	0.029	0.021
Tl	0.0003	0.0003
Pb	0.003	0.006
U	0.0	0.0

Notes	Cocodamol was prescribed to Mr Barberi

B5 ICPMS	ICP-MS of contents of medicine bottle
Evidence No.:	10-02-0071-B4 Contents of the Medicine Bottle
Test	Microwave acid digestion with 5 ml of nitric acid to 1g of sample then ICP-OES.
Results	

	Blank ppm w/v	B5 ppm w/v
51V	0.006	0.063
55Mn	0.032	0.101
65Cu	0.007	0.091
66Zn	0.027	0.034
75As	0.001	0.025
82Se	0.004	0.011
111Cd	0.002	0.005
118Sn	0.483	0.43
202Hg	0.029	0.021
205Tl	0.0003	0.0003
208Pb	0.003	0.006
238U	0.0	0.0

Notes	Cocodamol was prescribed to Mr Barberi

B6 FP	Fingerprinting request
Evidence No.:	10-02-0071-B6 Cordless Telephone
Test	Powder and fixed print then photographed.
Prints	 
Identity	Print from Mrs. Barberi's left thumb Print from Mrs. Barberi's middle finger
Notes	No body fluids or skin samples found on telephone. Negative to luminol test for blood.

B6 ID	Telephone records
Evidence No.:	10-02-0071-B6 Cordless telephone.
Test	BT were contacted and sent the records as requested. The Past few days is shown.

CALL TO	NUMBER	DATE	TIME	DURATION (minutes)
Kutnall	0236-896432	8/02/01	18:44	10:09
Beauport	022-8305831	8/02/01	18:56	58:16
Beauport	022-8008000	9/02/01	10:21	5:18
Kutnall	0236-896432	9/02/01	19:01	0:05
Kutnall	0236-896432	9/02/01	20:45	0:05
Kutnall	0236-896432	9/02/01	21:38	12:08
Beauport	022-8906227	10/02/01	06:21	5:10
Atwood	0231-657801	10/02/01	09:20	10:08
Beauport	022-8305831	10/02/01	11:23	1:43
Beauport	999	10/02/01	16:09	2:01
Beauport	022-8305831	10/02/01	17:56	1:25

Notes	022-8305831 Mr & Mrs A.F. Barberi 022-8906227 Beauport Angling Association 022-8008000 Coley Water Company 0231-657801 Mrs H. Petifer 0236-896432 Mr Simon Shaw (Ex Husband)

B3	CO detector
Evidence No.:	10-02-71 CO detector
Test	Visual inspection
Results	No CO detected by this detector
Notes	

B7 IR	Identity of suspected blood stain
	10-02-0071-B Scrapping of suspected blood sample from sink.
Test	Drift FT-IR
Results	IR spectra indicative of pigment.
Identity	Paint probably from the newly painted hall. Consistent with the paint can in room.
Notes	

B7	Suspected blood sample
Evidence No.:	10-02-0071-B7 Scrapping of suspected blood sample from sink.
Test	
Results	
Identity	
Notes	

B7 ID	Suspected blood sample
Evidence No.:	10-02-0071-B7 Scrapping of suspected blood sample from sink.
Test	Luminol test. Blood is shown as fluoresces under UV light.
Results	Negative
Identity	Not blood.
Notes	Suggest FT-IR or Raman spectroscopy and comparison studies if required.

B7 DNA	DNA testing of suspect blood sample
Evidence No.:	10-02-0071-B7 Scrapping of suspected blood sample from sink.
Test	DNA profiling.
Results	No DNA found
Identity	
Notes	It is a good idea to check whether it is blood before sending away for a very expensive test. The results would normally take about a month.

B8 ID	List of the contents of drug cabinet
Evidence No.:	10-02-0071-B8 Contents of the drug cabinet.
Test	N/A
Results	N/A
Identity	500mg Coproximol (Prescription Mr Barberi) 250mg Panadol 100mg Valium (Prescription Mrs Barberi) 20mg Cipramil (Prescription Mrs Barberi) 250mg Penicillin (Prescription B. Barberi)
Notes	No suspect or controlled substances were present.

	NMR request
Evidence No.:	
Test	NMR
Results	This is not a suitable method. It should be only used on pure compounds that are unlikely to occur during an Forensic investigation and for confirmation after suitable chromatography (TLC, HPLC or LC.)
Identity	
Notes	Forensic Lab would have to send out for this analysis and would take over a week to return.

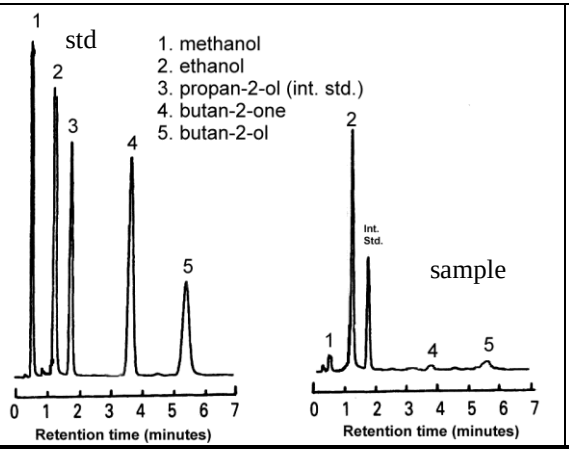
	Mass spectrometry request
Evidence No.:	
Test	MS
Results	This is not a suitable method. It should be only used on pure compounds and for confirmation after suitable chromatography (TLC or LC) or as part of a hyphenated method (GC-MS, HPLC-MS, ICP-MS etc.)
Identity	
Notes	Forensic Lab would have to send out for this analysis and would take over a week to return.

Evidence No.:	
Test	
Results	
Notes	

APPENDIX C: Toxicology of Body Results

C1 GC-MS	GC-MS of blood
Evidence No.:	10-02-0071-C1 Blood sample from dead body
Test	GC-MS after suitable extraction method.
Results	
Identity	No illicit drugs were found. Only citalopram (Cipramil) was found to be present.
Notes	The levels found were consistent with normal administration of the drug.

C1 HPLC	HPLC of blood
Evidence No.:	10-02-0071-C1 Blood sample from dead body
Test	HPLC-MS after suitable extraction method.
Results	
Identity	No illicit drugs were found. Only citalopram (Cipramil) was found to be present.
Notes	The levels found were consistent with normal administration of the drug.

C1 GC	GLC for alcohol in blood
Evidence No.:	10-02-0071-C1 Blood sample from the dead body.
Test	GLC-FID by headspace vapour analysis in equilibrium with blood. 3mm (ID) x 2m glass column with 0.2% Carbowax 1500 on graphitised carbon and Oven temperature = 80C
Results Each component has 80 mg per 100ml of blood Legal limit for driving is 80mg of ethanol per 100ml of blood.	
	The dead body had consumed alcohol just prior to death. About twice the legal limit to drive

C1 GF	GFAAS for Tl in blood
Evidence No.:	10-02-0071-C1 Blood sample from the dead body.
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then Graphite Furnace AAS
Results	**Element** | **10-02-0071-C1** Tl | 71 ppb
Notes	The levels of Thallium are toxic and so contributed to the death of the dead body.

C1 ICP	ICP-OES of blood		
Evidence No.:	10-02-0071-C1 Blood sample from the body.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-OES		
Results	**Element**	**10-02-0071-C1 (w/v)**	
	Al	< 5 ppb	
	As	90 ppb	
	Cd	< 5 ppb	
	Cu	1.09 ppm	
	Hg	< 5 ppb	
	Mn	10 ppb	
	Ni	< 5 ppb	
	Pb	21 ppb	
	Se	10 ppb	
	Sn	< 5 ppb	
	Tl	70 ppb	
	U	< 5 ppb	
	Zn	7.06 ppm	
Notes			

C1 ICPMS	ICP-MS of the blood		
Evidence No.:	10-02-0071-C1 Blood sample from the body.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS		
Results	**Element**	**10-02-0071-C1 (w/v)**	
	Al	ND	
	As*	0.505 ppm	
	Cd	2 ppb	
	Cu	1.1 ppm	
	Hg	2 ppb	
	Mn	11 ppb	
	Ni	< 0.5 ppb	
	Pb	20.8 ppb	
	Se	9 ppb	
	Sn	<0.5 ppb	
	Tl	68 ppb	
	U	< 0.5 ppb	
	Zn	7.2 ppm	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion ND = not determined		

C1	Blood body: Determination of		
Evidence No.:	10-02-0071-C1 Blood sample from the dead body.		
Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

C1	Blood: metals by		
Evidence No.:	10-02-0071-C1 Blood sample from the body.		
Test			
Results	**Element**	**10-02-0071-C1 (w/v)**	
	Al	< 5 ppb	
	As	90 ppb	
	Cd	< 5 ppb	
	Cu	1.09 ppm	
	Hg	< 5 ppb	
	Mn	10 ppb	
	Ni	< 5 ppb	
	Pb	21 ppb	
	Se	10 ppb	
	Sn	< 5 ppb	
	Tl	70 ppb	
	U	< 5 ppb	
	Zn	7.06 ppm	
Notes			

C2 ICP	ICP-OES of hair		
Evidence No.:	10-02-0071-C2 Hair sample from the body.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-OES		
Results	**Element**	**10-02-0071-C2 (w/w)**	
	Al	< 5 ppb	
	As	65 ppb	
	Cd	98 ppb	
	Cu	25.0 ppm	
	Hg	2.20 ppm	
	Mn	1.50 ppm	
	Ni	0.22 ppm	
	Pb	18.9 ppm	
	Se	0.99 ppm	
	Sn	< 5 ppm	
	Tl	1.2 ppm	
	U	< 5 ppb	
	Zn	1.02 ppm	
Notes			

C2 ICPMS	ICP-MS of hair		
Evidence No.:	10-02-0071-C2 Hair sample from the body.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-C2 (w/w)**	
	Al	ND	
	As*	82 ppb	
	Cd	98 ppb	
	Cu	25.0 ppm	
	Hg	2.20 ppm	
	Mn	1.50 ppm	
	Ni	0.22 ppm	
	Pb	18.9 ppm	
	Se	0.99 ppm	
	Sn	< 0.5 ppb	
	Tl	1.2 ppm	
	U	< 0.5 ppb	
	Zn	1.02 ppm	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion ND = not determined		

C2 XRF	XRF of hair		
Evidence No.:	10-02-0071-C2 Hair sample from the body.		
Test	XRF is a non-destructive method requiring short sample preparation.		
Results	**Element**	**10-02-0071-C2 ppm (w/w)**	
	As	1.2	
	Cd	1.1	
	Cu	27.5	
	Hg	1.8	
	Mn	1.2	
	Pb	19.4	
	Se	1.0	
	Tl	1.2	
Notes	It is difficult to distinguish between environmental deposition of metals and that from ingested sources.		

C2 SEM-XRF	SEM-XRF of hair		
Evidence No.:	10-02-0071-C2 Hair sample from the body.		
Test	SEM-X-Ray Fluorescence can be used to determine when the poison was ingested.		
Results	**Element**	**10-02-0071-C2 ppm (w/w)**	
	As	1.2	
	Cd	1.1	
	Cu	27.5	
	Hg	1.8	
	Mn	1.2	
	Pb	19.2	
	Se	1.0	
	Tl	1.2	
Notes	Great deal of damage to the hair damage especially to the roots. This is unlikely to have been from the application of chemicals. All metals were evenly distributed except for Thallium that was found in or within 4cm of the root. This suggests that exposure to thallium has been for no more than a month. The root was opaque to X-rays.		

C2 EDAX	SEM-EDAX of hair
Evidence No.:	10-02-0071-C2 Hair sample from the body.
Test	Scanning Electron Microscopy-Energy Dispersive Analysis of X-rays
Results	SEM-EDAX is not a sensitive enough method to determine trace elements.
Identity	
Notes	The hair showed a great deal of damage especially to the roots. This is unlikely to have been caused by an externally applied chemical.

C2	Hair: determination of		
Evidence No.:	10-02-0071-C2 Hair sample from the dead body.		
Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

C2	Hair: metals by		
Evidence No.:	10-02-0071-C2 Hair sample from the body.		
Test			
Results	**Element**	**10-02-0071-C2 (w/w)**	
	Al	< 5 ppb	
	As	65 ppb	
	Cd	98 ppb	
	Cu	25.0 ppm	
	Hg	2.20 ppm	
	Mn	1.50 ppm	
	Ni	0.22 ppm	
	Pb	18.9 ppm	
	Se	0.99 ppm	
	Sn	< 5 ppm	
	Tl	1.2 ppm	
	U	< 5 ppb	
	Zn	1.02 ppm	
Notes			

C3 GCMS	GC-MS of urine
Evidence No.:	10-02-0071-C2 Urine sample from dead body
Test	GC-MS after suitable extraction method.
Results	
Identity	No illicit drugs were found. Only citalopram (Cipramil) was found to be present.
Notes	The levels found were consistent with normal administration of the drug.

C3 HPLC	HPLC of urine
Evidence No.:	10-02-0071-C3 Urine sample from dead body
Test	HPLC-MS after suitable extraction method.
Results	
Identity	No illicit drugs were found. Only citalopram (Cipramil) was found to be present.
Notes	The levels found were consistent with normal administration of the drug.

C3 ICP	ICP-OES of urine		
Evidence No.:	10-02-0071-C3 Urine samples from the body.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-OES		
Results	**Element**	**10-02-0071-C3 (w/v)**	
	Al	6 ppb	
	As	80 ppb	
	Cd	< 5 ppb	
	Cu	1.89 ppm	
	Hg	6 ppb	
	Mn	10 ppb	
	Ni	< 5 ppb	
	Pb	57 ppb	
	Se	23 ppb	
	Sn	< 5 ppb	
	Tl	90 ppb	
	U	< 5 ppb	
	Zn	0.35 ppm	
Notes			

C3 GF	GFAAS for Tl in urine		
Evidence No.:	10-02-0071-C3 Urine samples from the dead body.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then Graphite Furnace AAS		
Results	**Element**	**10-02-0071-C3 (w/v)**	
	Tl	97 ppb	
Notes	The levels of Thallium are toxic and so contributed to the death of the dead body.		

C3 ICPMS	ICP-MS of the urine		
Evidence No.:	10-02-0071-C3 Urine samples from the body.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS		
Results	**Element**	**10-02-0071-C3 (w/v)**	
	Al	ND	
	As*	0.865 ppm	
	Cd	3 ppb	
	Cu	1.89 ppm	
	Hg	6 ppb	
	Mn	9 ppb	
	Ni	<0.5 ppb	
	Pb	57 ppb	
	Se	23 ppb	
	Sn	< 0.5 ppb	
	Tl	86 ppb	
	U	<0.5 ppb	
	Zn	0.35 ppm	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion ND = not determined		

C3	Urine: Determination of		
Evidence No.:	10-02-0071-C3 Urine samples from the dead body.		
Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

C3	Urine: metals by		
Evidence No.:	10-02-0071-C3 Urine samples from the body.		
Test			
Results	**Element**	**10-02-0071-C3 (w/v)**	
	Al	6 ppb	
	As	80 ppb	
	Cd	< 5 ppb	
	Cu	1.89 ppm	
	Hg	6 ppb	
	Mn	10 ppb	
	Ni	< 5 ppb	
	Pb	57 ppb	
	Se	23 ppb	
	Sn	< 5 ppb	
	Tl	90 ppb	
	U	< 5 ppb	
	Zn	0.35 ppm	
Notes			

C4 GCMS	GC-MS of kidney
Evidence No.:	10-02-0071-C4 Dead body's Kidney
Test	GC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons, toxins or their metabolites.
Identity	
Notes	Renal failure was the cause of death. It is unclear from analysis what caused this. The Cirrhosis of the Liver was certainly caused by long abuse of alcohol.

C4 HPLC	HPLC of kidney
Evidence No.:	10-02-0071-C4 Dead body's Kidney
Test	HPLC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons, toxins or their metabolites.
Identity	
Notes	Renal failure was the cause of death. It is unclear from analysis what caused this. The Cirrhosis of the Liver was certainly caused by long abuse of alcohol.

C4 GF	GFAAS for Tl in kidney		
Evidence No.:	10-02-0071-C4 Kidney from the dead body.		
Test	Sample microwave acid digestion with 5ml of conc. nitric acid then Graphite Furnace AAS		
Results	**Element**	**10-02-0071-C4 ppm (w/w)**	
	Tl	0.505	
Notes	The levels of Thallium are toxic and so contributed to the death of the dead body.		

C4 ICP	ICP-OES of the kidney		
Evidence No.:	10-02-0071-C4 Kidney from the dead body		
Test	Sample microwave acid digestion with 5 ml of conc. nitric acid then ICP-OES		
Results	**Element**	**10-02-0071-C4 (w/w)**	
	Al	0.40 ppm	
	As	< 5 ppb	
	Cd	28.0 ppm	
	Cu	3.70 ppm	
	Hg	0.29 ppm	
	Mn	45.0 ppm	
	Ni	0.19 ppm	
	Pb	0.86 ppm	
	Se	0.81 ppm	
	Sn	Not determined	
	Tl	0.49 ppm	
	U	7 ppb	
	Zn	18.9 ppm	
Notes	Some elements were not quantified.		

C4 ICPMS	ICP-MS of the kidney		
Evidence No.:	10-02-0071-C4 Kidney from the dead body.		
Test	Sample microwave acid digestion with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-C4 (w/w)**	
	Al	ND	
	As*	1.3 ppm	
	Cd	28.0 ppm	
	Cu	3.70 ppm	
	Hg	0.29 ppm	
	Mn	45.0 ppm	
	Ni	0.19 ppm	
	Pb	0.86 ppm	
	Se	0.81 ppm	
	Sn	Not determined	
	Tl	0.49 ppm	
	U	0.7 ppb	
	Zn	18.9 ppm	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion ND = not determined		

C4	Kidney: Determination of		
Evidence No.:	10-02-0071-C4 Kidney from the dead body.		
Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

C4	Kidney : metals by
Evidence No.:	10-02-0071-C4 Kidney from the dead body

Test			
Results	**Element**	**10-02-0071-C4 (w/w)**	
	Al	0.40 ppm	
	As	< 5 ppb	
	Cd	28.0 ppm	
	Cu	3.70 ppm	
	Hg	0.29 ppm	
	Mn	45.0 ppm	
	Ni	0.19 ppm	
	Pb	0.86 ppm	
	Se	0.81 ppm	
	Sn	Not determined	
	Tl	0.49 ppm	
	U	7 ppb	
	Zn	18.9 ppm	
Notes	Some elements were not quantified.		

C5 GCMS	GC-MS of liver
Evidence No.:	10-02-0071-C5 Dead body's liver
Test	GC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons, toxins or their metabolites.
Identity	
Notes	Renal failure was the cause of death. It is unclear from analysis what caused this. The Cirrhosis of the Liver was certainly caused by long abuse of alcohol.

C5 HPLC	HPLC of liver
Evidence No.:	10-02-0071-C5 Dead body's liver
Test	HPLC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons, toxins or their metabolites.
Identity	
Notes	Renal failure was the cause of death. It is unclear from analysis what caused this. The Cirrhosis of the Liver was certainly caused by long abuse of alcohol.

C5 GF	GFAAS for Tl in liver		
Evidence No.:	10-02-0071-C5 Sample of liver from the dead body.		
Test	Sample microwave acid digestion with 5ml of conc. nitric acid then Graphite Furnace AAS		
Results	**Element**	**10-02-0071-C4 ppm (w/v)**	**10-02-0071-C5 ppm (w/v)**
	Tl	0.505	0.296
Notes	The levels of Thallium are toxic and so contributed to the death of the dead body.		

C5 ICP	ICP-OES of the liver
Evidence No.:	10-02-0071-C5 Liver from the dead body.
Test	Sample microwave acid digestion with 5 ml of conc. nitric acid then ICP-OES

Results	Element	10-02-0071-C5 (w/w)	
	Al	0.50	
	As	< 5 ppb	
	Cd	1.5 ppm	
	Cu	0.82 ppm	
	Hg	55 ppb	
	Mn	2.20 ppm	
	Ni	45 ppb	
	Pb	0.48 ppm	
	Se	0.25 ppm	
	Sn	Not determined	
	Tl	0.29 ppm	
	U	< 5 ppb	
	Zn	34.6 ppm	
Notes	Some elements were not quantified.		

C5 ICPMS — ICP-MS of the liver

Evidence No.:	10-02-0071-C5 Liver from the dead body		
Test	Sample microwave acid digestion with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-C5 (w/w)**	
	Al	ND	
	As*	1.20 ppm	
	Cd	1.5 ppm	
	Cu	0.80 ppm	
	Hg	65 ppb	
	Mn	2.20 ppm	
	Ni	40 ppb	
	Pb	0.48 ppm	
	Se	0.25 ppm	
	Sn	Not determined	
	Tl	0.29 ppm	
	U	< 0.5 ppb	
	Zn	35.6 ppm	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion ND = not determined		

C5 — Liver: Determination of

Evidence No.:	10-02-0071-C5 Sample of liver from the dead body.

Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

C5 — Liver : metals by

Evidence No.:	10-02-0071-C5 Liver from the dead body.		
Test			
Results	**Element**	**10-02-0071-C5 (w/w)**	
	Al	0.50	
	As	< 5 ppb	
	Cd	1.5 ppm	
	Cu	0.82 ppm	
	Hg	55 ppb	
	Mn	2.20 ppm	
	Ni	45 ppb	
	Pb	0.48 ppm	
	Se	0.25 ppm	
	Sn	Not determined	
	Tl	0.29 ppm	
	U	< 5 ppb	
	Zn	34.6 ppm	
Notes	Some elements were not quantified.		

C6 GCMS — GC-MS of stomach contents

Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.

Test	GC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons.
Identity	
Notes	Maria Barberi's last meal was Chicken Chasseur and there is evidence for considerable amount of alcohol consumed.

C6 HPLC	**HPLC of stomach contents**
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.
Test	HPLC-MS after suitable extraction method.
Results	This showed a very complex trace. None of these were identified as organic poisons, toxins or their metabolites.
Identity	
Notes	The dead body's last meal was Chicken Chasseur and there is evidence for considerable amount of alcohol consumed.

C6 GF	**GFAAS for Tl in stomach contents**
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then Graphite Furnace AAS
Results	**Element** / **10-02-0071-C6 (w/w)** Tl / 82 ppb
Notes	Suggest that Thallium was ingested within 12 hours of death probably in food.

C6 ICP	**ICP-OES of stomach contents**
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.
Test	Sample microwave acid digested with nitric acid then ICP-OES
Results	**Element** / **10-02-0071-C6 (w/w)** Al / < 5 ppb As / Not determined Cd / 10 ppb Cu / 0.15 ppm Hg / 70 ppb Mn / 0.56 ppm Ni / Not determined Pb / 1.2 ppm Se / 0.81 ppm Sn / Not determined Tl / 8 ppb U / < 5 ppb Zn / 15.9 ppm
Notes	Some elements were not quantified.

C6 ICPMS	**ICP-MS of stomach contents**
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.

Test	Sample microwave acid digested with nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-C6 (w/w)**	
	Al	Not determined	
	As	Not determined	
	Cd	11 ppb	
	Cu	0.15 ppm	
	Hg	70 ppb	
	Mn	0.56 ppm	
	Ni	Not determined	
	Pb	1.2 ppm	
	Se	0.81 ppm	
	Sn	Not determined	
	Tl	84 ppb	
	U	< 0.5 ppb	
	Zn	15.9 ppm	
Notes	Some elements were not quantified.		

Test			
Results	**Element**	**10-02-0071-C6 (w/w)**	
	Al	< 5 ppb	
	As	Not determined	
	Cd	10 ppb	
	Cu	0.15 ppm	
	Hg	70 ppb	
	Mn	0.56 ppm	
	Ni	Not determined	
	Pb	1.2 ppm	
	Se	0.81 ppm	
	Sn	Not determined	
	Tl	8 ppb	
	U	< 5 ppb	
	Zn	15.9 ppm	
Notes	Some elements were not quantified.		

C6	Stomach contents: Determination of		
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.		
Test			
Results	**Analyte**	**10-02-0071-C1**	
Notes			

Evidence No.:	
Test	
Results	
Notes	

C6	Stomach contents: metals by
Evidence No.:	10-02-0071-C6 Stomach contents from the dead body.

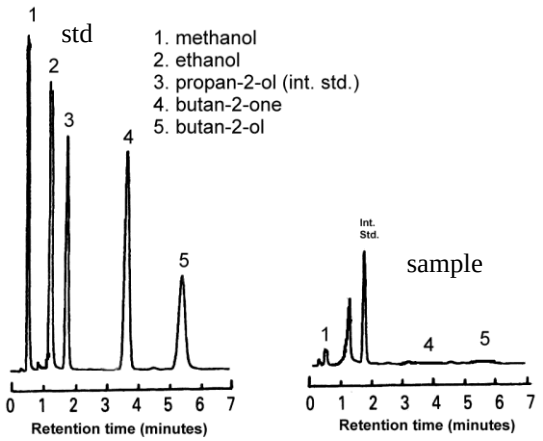
AAS	Toxicology of Tl by atomic spectroscopy
Evidence No.:	Samples from the dead body.
Test	Alkaline digestion for bodily fluids and acid digestion for solids then AAS.
Results	Results at and below the limit of detection of 1 ppm for this method.
Identity	Inconclusive as to the presence of Tl.
Notes	

	Please be more specific.
Evidence No.:	
Test	It is unclear from your request as to what you are looking for. Please be more specific.
Results	
Notes	Inorganic compounds should be determined using primarily atomic absorption (AAS, GFAAS), atomic emission (ICP, XRF etc.) spectroscopy or electrochemical methods.

	Spectroscopy of biological samples
Evidence No.:	Biological samples.
Test	Testing cannot be carried out if you do not specify the method. Spectroscopy is a very wide subject indeed from atomic to molecular to X-ray spectroscopy.
Results	N/A
Notes	Would suggest atomic spectroscopy (ICP, AAS or GFAAS) or X-ray fluorescence as suitable methods for heavy metal poisons.

XRF	Toxicology by XRF
Evidence No.:	Samples from the dead body
Test	X-ray Fluorescence is a non-destructive method requiring a short preparation time.
Results	XRF is not a suitable method for urine, blood, kidney, liver or stomach contents. A method looking at the surface elemental composition of the sample and cannot be performed on liquids.
Identity	
Notes	

APPENDIX D: Toxicology of Family Results

S1 GC	GLC for alcohol in blood of Mr Barberi
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi
Test	GLC-FID by headspace vapour analysis in equilibrium with blood. 3mm (ID) x 2m glass column with 0.2% Carbowax 1500 on graphitised carbon and Oven temperature = 80C
Results Each component has 80 mg per 100ml of blood Legal limit for driving is 80mg of ethanol per 100ml of blood.	 A low amount of alcohol was found in his blood. Below the legal limit to drive

S1 GF	GFAAS for Tl in blood from Mr Martin Barberi		
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then graphite furnace AAS		
Results	**Element**	**10-02-0071-S1 ppm (w/v)**	
	Tl	0.302	
Notes	The levels of Thallium are considered toxic probably causing illness.		

S1 ICP	ICP-OES of the blood from Mr Martin Barberi		
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS		
Results	**Element**	**10-02-0071-C1 (w/v)**	
	As	<1 ppb	
	Cd	8 ppb	
	Cu	1.3 ppm	
	Hg	< 10 ppb	
	Mn	< 10 ppb	
	Ni	< 5 ppb	
	Pb	0.2 ppm	
	Se	9 ppb	
	Tl	0.21 ppm	
	U	< 5 ppb	
Notes			

S1 ICPMS	ICP-MS of blood from Mr Martin Barberi		
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi.		
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS		
Results	**Element**	**10-02-0071-S1 (w/v)**	
	As*	2.5 ppm	
	Cd	2 ppb	
	Cu	1.1 ppm	
	Hg	3 ppb	
	Mn	11 ppb	
	Ni	< 0.5 ppb	
	Pb	0.2 ppm	
	Se	9 ppb	
	Tl	0.20 ppm	
	U	<0.5 ppb	
Notes	* Possible interference from $^{40}Ar^{35}Cl$ ion		

S1	Blood from Martin: determination of		
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi.		
Test			
Results	**Analyte**	**10-02-0071-S1 (w/v)**	
Notes			

S2 GF	GFAAS for Tl of the hair Mr Martin Barberi		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S2 ppm (w/v)**	
	Tl	12 ppb	
Notes	The levels of Thallium are not considered acutely toxic.		

S1 ICP	Blood from Martin: metals by		
Evidence No.:	10-02-0071-S1 Blood sample from Mr Martin Barberi.		
Test			
Results	**Element**	**10-02-0071-C1 (w/v)**	
	As	<1 ppb	
	Cd	8 ppb	
	Cu	1.3 ppm	
	Hg	< 10 ppb	
	Mn	< 10 ppb	
	Ni	< 5 ppb	
	Pb	0.2 ppm	
	Se	9 ppb	
	Tl	0.21 ppm	
	U	< 5 ppb	
Notes			

S2 ICP	ICP-OES of the hair from Mr Martin Barberi		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S2 (w/w)**	
	As	1.0 ppm	
	Cd	1.5 ppm	
	Cu	17.4 ppm	
	Hg	1.5 ppm	
	Mn	3.5 ppm	
	Ni	0.4 ppm	
	Pb	35.5 ppm	
	Se	1.2 ppm	
	Tl	< 5 ppb	
	U	< 5 ppb	
Notes			

S2 ICPMS	ICP-MS of the hair from Mr Martin Barberi		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S2 (w/w)**	
	As	1.0 ppm	
	Cd	1.5 ppm	
	Cu	18.0 ppm	
	Hg	1.8 ppm	
	Mn	2.5 ppm	
	Ni	0.5 ppm	
	Pb	43.5 ppm	
	Se	1.2 ppm	
	Tl	4 ppb	
	U	< 0.5 ppb	
Notes	The interference from $^{40}Ar^{35}Cl$ ion is not significant, as the natural chloride levels of hair are small.		

S2 SEM-XRF	SEM-XRF of the hair of Mr Martin Barberi		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test	SEM-X-Ray Fluorescence can be used to determine when a poison was ingested.		
Results	**Element**	**10-02-0071-S2 ppm (w/w)**	
	As	< 1 ppb	
	Cd	0.9 ppm	
	Cu	15.0 ppm	
	Hg	2.2 ppm	
	Mn	1.5 ppm	
	Ni	0.2 ppm	
	Pb	41.9 ppm	
	Se	2.1 ppm	
	Tl	< 5 ppb	
Notes	Hair from Brigitte and Martin Barberi showed no damage to the roots. Brigitte Barberi is probably suffering from dandruff and has taken special medication.		

S2 XRF	XRF of the hair from Mr Martin Barberi		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test	XRF is a non-destructive method requiring short sample preparation.		
Results	**Element**	**10-02-0071-S2 ppm (w/w)**	
	As	< 1 ppb	
	Cd	0.9 ppm	
	Cu	15.0 ppm	
	Hg	2.2 ppm	
	Mn	1.5 ppm	
	Ni	0.2 ppm	
	Pb	41.9 ppm	
	Se	2.1 ppm	
	Tl	< 5 ppb	
	U	< 5 ppb	
Notes			

S2	Hair from Martin: determination of		
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.		
Test			
Results	**Analyte**	**10-02-0071-S2 (w/v)**	
Notes			

S2	Hair from Martin: metals by
Evidence No.:	10-02-0071-S2 Head Hair from Mr Martin Barberi.
Test	

Results	**Element**	**10-02-0071-C1 (w/v)**
	As	<1 ppb
	Cd	8 ppb
	Cu	1.3 ppm
	Hg	< 10 ppb
	Mn	< 10 ppb
	Ni	< 5 ppb
	Pb	0.2 ppm
	Se	9 ppb
	Tl	0.21 ppm
	U	< 5 ppb

Notes	

S3 GF	GFAAS for Tl in blood from Miss Brigitte Barberi
Evidence No.:	10-02-0071-S3 Blood sample from Miss Brigitte Barberi.
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then graphite furnace AAS

Results	**Element**	**10-02-0071-S3 ppm (w/v)**
	Tl	0.223

Notes	The levels of Thallium are considered toxic probably causing illness.

S3 ICP	ICP-OES of blood from Miss Brigitte Barberi
Evidence No.:	10-02-0071-S3 Blood sample from Miss Brigitte Barberi.
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS

Results	**Element**	**10-02-0071-S3 ppm (w/v)**
	As	< 5 ppb
	Cd	< 5 ppb
	Cu	1.2 ppm
	Hg	< 10 ppb
	Mn	< 10 ppb
	Ni	< 5 ppb
	Pb	57 ppb
	Se	23 ppb
	Tl	15 ppb
	U	< 5 ppb

Notes	

S3 ICPMS	ICP-MS of blood from Miss Brigitte Barberi
Evidence No.:	10-02-0071-S3 Blood sample from Miss Brigitte Barberi.
Test	Sample microwave alkaline digestion with tetramethylammonium hydroxide then ICP-MS

Results	**Element**	**10-02-0071-S3 ppm (w/v)**
	As	2.8 ppm
	Cd	3 ppb
	Cu	1.9 ppm
	Hg	6 ppb
	Mn	9 ppb
	Ni	< 5 ppb
	Pb	57 ppb
	Se	23 ppb
	Tl	0.18 ppm
	U	< 0.5 ppb

Notes	Possible interference from $^{40}Ar^{35}Cl$ ion

S3	Blood from Brigitte: determination of		
Evidence No.:	10-02-0071-S3 Blood sample from Miss Brigitte Barberi.		
Test			
Results	**Analyte**	**10-02-0071-S3**	
Notes			

S3	Blood from Brigitte		
Evidence No.:	10-02-0071-S3 Blood sample from Miss Brigitte Barberi.		
Test			
Results	**Element**	**10-02-0071-S3 ppm (w/v)**	
	As	< 5 ppb	
	Cd	< 5 ppb	
	Cu	1.2 ppm	
	Hg	< 10 ppb	
	Mn	< 10 ppb	
	Ni	< 5 ppb	
	Pb	57 ppb	
	Se	23 ppb	
	Tl	15 ppb	
	U	< 5 ppb	
Notes			

S4 GF	GFAAS for Tl of hair from Miss Brigitte Barberi.		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S4 ppm (w/v)**	
	Tl	0.003	
Notes	The levels of Thallium are not considered acutely toxic.		

S4 ICP	ICP-OES of hair from Miss Brigitte Barberi.		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S4 ppm (w/w)**	
	As	0.2 ppm	
	Cd	0.3 ppm	
	Cu	10.2 ppm	
	Hg	1.1 ppm	
	Mn	1.3 ppm	
	Ni	0.1 ppm	
	Pb	10.2 ppm	
	Se	21.4 ppm	
	Tl	< 5 ppb	
	U	< 5 ppb	
Notes			

S4 ICPMS	ICP-MS of hair from Miss Brigitte Barberi		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test	Sample microwave acid digested with 5 ml of conc. nitric acid then ICP-MS		
Results	**Element**	**10-02-0071-S4 ppm (w/w)**	
	As	0.2 ppm	
	Cd	0.3 ppm	
	Cu	10.2 ppm	
	Hg	1.1 ppm	
	Mn	1.3 ppm	
	Ni	0.1 ppm	
	Pb	10.2 ppm	
	Se	21.4 ppm	
	Tl	< 0.5 ppb	
	U	<0.5 ppb	
Notes	The interference from $^{40}Ar^{35}Cl$ ion is not significant, as the natural chloride levels of hair are small.		

S4 SEM-XRF	SEM-XRF of the hair of Miss Brigitte Barberi		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test	SEM-X-Ray Fluorescence can be used to determine when a poison was ingested.		
Results	**Element**	**10-02-0071-S4 ppm (w/w)**	
	As	<1 ppb	
	Cd	0.9 ppm	
	Cu	5.0 ppm	
	Hg	1.2 ppm	
	Mn	1.5 ppm	
	Ni	0.2 ppm	
	Pb	21.4 ppm	
	Se	21.0 ppm	
	Tl	< 5 ppb	
Notes	Hair from Brigitte Barberi showed no damage to the roots. Brigitte Barberi is probably suffering from dandruff and has taken special medication.		

S4	Hair from Brigitte: determination of		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test			
Results	**Element**	**10-02-0071-S4 ppm (w/v)**	
	Tl	0.003	
Notes			

S4	Hair from Brigitte: metals by		
Evidence No.:	10-02-0071-S4 Head Hair from Miss Brigitte Barberi.		
Test			
Results	**Element**	**10-02-0071-S4 ppm (w/w)**	
	As	0.2 ppm	
	Cd	0.3 ppm	
	Cu	10.2 ppm	
	Hg	1.1 ppm	
	Mn	1.3 ppm	
	Ni	0.1 ppm	
	Pb	10.2 ppm	
	Se	21.4 ppm	
	Tl	< 5 ppb	
	U	< 5 ppb	
Notes			

APPENDIX E: Further samples from scene

H1-3 GC	GLC of wine from kitchen
Evidence No.:	10-02-0071-H1 Chilean Cabernet Sauvignon 1998 10-02-0071-H2 Jacob's Creek Dry Riesling 2000 10-02-0071-H3 Gooseberry Wine 1999, T.D.
Test	GLC-FID
Results	Results consistent with being wine. No suspicious bands evident.
Identity	Wine with no organic impurity observed.
Notes	

H2 ICPMS	ICP-MS of white wine from kitchen		
Evidence No.:	10-02-0071-H2 Jacob's Creek Dry Riesling 2000		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**H2 White wine (w/v)**
	51 V	6 ppb	13 ppb
	55 Mn	32 ppb	1.37 ppm
	65 Cu	7 ppb	45 ppb
	66 Zn	27 ppb	1.02 ppm
	75 As	1 ppb	11 ppb
	82 Se	4 ppb	4 ppb
	111 Cd	2 ppb	3 ppb
	118 Sn	0.483 ppm	0.36 ppm
	202 Hg	29 ppb	37 ppb
	205 Tl	0.3 ppb	0.2 ppb
	208 Pb	3 ppb	21 ppb
	238 U	0.2 ppb	< 0.5 ppb
Notes			

H1 ICPMS	ICP-MS of red wine from kitchen		
Evidence No.:	10-02-0071-H1 Chilean Cabernet Sauvignon 1998		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**H2 Red wine (w/v)**
	51 V	6 ppb	41 ppb
	55 Mn	32 ppb	0.935 ppm
	65 Cu	7 ppb	64 ppb
	66 Zn	27 ppb	0.585 ppm
	75 As	1 ppb	14 ppb
	82 Se	4 ppb	1 ppb
	111 Cd	2 ppb	2 ppb
	118 Sn	0.483 ppm	0.391 ppm
	202 Hg	29 ppb	20 ppb
	205 Tl	0.3 ppb	0.3 ppb
	208 Pb	3 ppb	52 ppb
	238 U	0.2 ppb	0.3 ppb
Notes			

H3 ICPMS	ICP-MS of gooseberry wine from kitchen		
Evidence No.:	10-02-0071-H3 Gooseberry Wine 1999, T.D.		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**H1 Gooseberry wine (w/v)**
	51 V	6 ppb	63 ppb
	55 Mn	32 ppb	2.34 ppm
	65 Cu	7 ppb	91 ppb
	66 Zn	27 ppb	1.42 ppm
	75 As	1 ppb	25 ppb
	82 Se	4 ppb	11 ppb
	111 Cd	2 ppb	3 ppb
	118 Sn	0.483 ppm	0.43 ppm
	202 Hg	29 ppb	21 ppb
	205 Tl	0.3 ppb	16.1 ppm
	208 Pb	3 ppb	35 ppb
	238 U	0.2 ppb	0.2 ppb
Notes			

H1	Red wine from kitchen: metals by		
Evidence No.:	10-02-0071-H1 Chilean Cabernet Sauvignon 1998		
Test			
Results		**Blank**	**H2 Red wine (w/v)**
	V	6 ppb	41 ppb
	Mn	32 ppb	0.935 ppm
	Cu	7 ppb	64 ppb
	Zn	27 ppb	0.585 ppm
	As	<5 ppb	14 ppb
	Se	<5 ppb	<5 ppb
	Cd	<5 ppb	<5 ppb
	Sn	ND	ND
	Hg	29 ppb	20 ppb
	Tl	<5 ppb	<5 ppb
	Pb	<5 ppb	52 ppb
	U	<5 ppb	<5 ppb
Notes	ND = Not determined		

H2	White wine from kitchen: metals by		
Evidence No.:	10-02-0071-H2 Jacob's Creek Dry Riesling 2000		
Test			
Results		**Blank**	**H2 (w/v)**
	V	6 ppb	13 ppb
	Mn	32 ppb	1.37 ppm
	Cu	7 ppb	45 ppb
	Zn	27 ppb	1.02 ppm
	As	<5 ppb	11 ppb
	Se	<5 ppb	<5 ppb
	Cd	<5 ppb	<5 ppb
	Sn	ND	0.36 ppm
	Hg	29 ppb	37 ppb
	Tl	<5 ppb	<5 ppb
	Pb	<5 ppb	21 ppb
	U	<5 ppb	<5 ppb
Notes	ND = Not determined		

H3	Gooseberry wine from kitchen: metals by		
Evidence No.:	10-02-0071-H3 Gooseberry Wine 1999, T.D.		
Test	Sample diluted 1 in 10 with 0.2% nitric acid then ICP-MS		
Results		**Blank**	**H1 Gooseberry wine (w/v)**
	V	6 ppb	63 ppb
	Mn	32 ppb	2.34 ppm
	Cu	7 ppb	91 ppb
	Zn	27 ppb	1.42 ppm
	As	<5 ppb	25 ppb
	Se	<5 ppb	11 ppb
	Cd	<5 ppb	<5 ppb
	Sn	ND	0.43 ppm
	Hg	29 ppb	21 ppb
	Tl	<5 ppb	16.1 ppm
	Pb	<5 ppb	35 ppb
	U	<5 ppb	<5 ppb
Notes	ND = Not determined		

H3 FP	Fingerprinting request		
Evidence No.:	10-02-0071-H3 Gooseberry Wine, 1999 T.D.		
Prints	Bottle was sprayed with ninhydrin which revealed three clear prints.		
Prints			
	Print from the left thumb of Mrs Barberi.	Print from left middle finger of Mrs Barberi.	Print from unknown person
Notes	The unidentified set is probably male due to their size.		

H3a FP	Identification of unknown print
Evidence No.:	10-02-0071-H3 Gooseberry Wine, 1999 T.D.
Prints	The unknown fingerprint was not from the Barberi family. Upon instructions it was checked with that of Mr Tim Dollar and was found to match.
Prints	
Notes	The unidentified set is probably male due to their size.

H4 GC	GLC of beer from the glass
Evidence No.:	10-02-0071-H4 Sample of beer from glass
Test	GLC-FID
Results	Results consistent with being beer. No suspicious bands evident.
Identity	Wine with no organic impurity observed.
Notes	

H4 ICPMS	ICP-MS of beer from the glass		
Evidence No.:	10-02-0071-H4 Sample of beer from glass		
Test	Undiluted into an ICP-MS		
Results		**Blank**	**H4 Beer (w/v)**
	51 V	6 ppb	33 ppb
	55 Mn	32 ppb	55 ppb
	65 Cu	7 ppb	14 ppb
	66 Zn	27 ppb	37 ppb
	75 As	1 ppb	0.9 ppb
	82 Se	4 ppb	4 ppb
	111 Cd	2 ppb	2 ppb
	118 Sn	0.483 ppm	0.495 ppm
	202 Hg	29 ppb	21 ppb
	205 Tl	0.3 ppb	0.2 ppb
	208 Pb	3 ppb	4 ppb
	238 U	0.2 ppb	0.4 ppb
Notes	High Sn probably instrumental.		

H4	Beer: metals by		
Evidence No.:	10-02-0071-H4 Sample of beer from glass		
Test			
Results		**Blank**	**H4 Beer (w/v)**
	V	6 ppb	33 ppb
	Mn	32 ppb	55 ppb
	Cu	7 ppb	14 ppb
	Zn	27 ppb	37 ppb
	As	<5 ppb	<5 ppb
	Se	<5 ppb	<5 ppb
	Cd	<5 ppb	<5 ppb
	Sn	ND	ND
	Hg	29 ppb	21 ppb
	Tl	<5 ppb	<5 ppb
	Pb	<5 ppb	<5 ppb
	U	<5 ppb	<5 ppb
Notes	ND = Not determined		

H5 GF	GFAAS of part eaten plate of food				
Evidence No.:	10-02-0071-H5 Part eaten plate of food.				
Test	Microwave acid digestion with 5 ml of nitric acid to 1g of sample then Graphite Furnace AAS				
Results		*Blank* w/v	**H5a potato w/w**	**H5b White sauce w/w**	**H5c Chicken w/w**
	Tl	< 5 ppb	0.6 ppm	26.7 ppm	3.4 ppm
Notes	Remnants of the Chicken Chasseur meal. GFAAS is a very sensitive quantitative method of analysis. 1000 times more sensitive than Flame AAS.				

H5 ICP	ICP-OES of part eaten plate of food				
Evidence No.:	10-02-0071-H5 Part eaten plate of food.				
Test	Microwave acid digestion with 5 ml of nitric acid to 1g of sample then ICP-OES.				
Results		*Blank* ppm w/v	**H5a potato (w/w)**	**H5b White sauce (w/w)**	**H5c Chicken (w/w)**
	V	6 ppb	8 ppb	70 ppb	90 ppb
	Mn	32 ppb	20 ppb	11.4 ppm	1.2 ppm
	Cu	< 5 ppb	90 ppb	0.4 ppm	0.1 ppm
	Zn	27 ppb	40 ppb	7.2 ppm	0.8 ppm
	As	< 5 ppb	< 5 ppb	10 ppb	2 ppb
	Se	< 5 ppb	10 ppb	50 ppb	0.18 ppm
	Cd	< 5 ppb	< 5 ppb	< 0.5 ppb	20 ppb
	Sn	0.48 ppm	0.48 ppm	0.44 ppm	0.41 ppm
	Hg	29 ppb	40 ppb	70 ppb	60 ppb
	Tl	< 5 ppb	0.6 ppm	26.7 ppm	3.4 ppm
	Pb	< 5 ppb	2.1 ppm	40 ppb	1.9 ppm
	U	< 5 ppb	< 5 ppb	< 5 ppb	< 5 ppb
Notes	Sn probably instrumental Remnants of the Chicken Chasseur meal.				

H5 ICPMS	ICP-MS of part eaten plate of food				
Evidence No.:	10-02-0071-H5 Part eaten plate of food				
Test	Microwave acid digestion with 5 ml of nitric acid to 1g of sample then ICP-MS.				
Results		*Blank* w/v	**H5a potato w/w**	**H5b White sauce w/w**	**H5c Chicken w/w**
	51 V	6 ppb	8 ppb	70 ppb	90 ppb
	55 Mn	32 ppb	19 ppb	11.4 ppb	1.2 ppm
	65 Cu	7 ppb	91 ppb	0.4 ppm	0.1 ppm
	66 Zn	27 ppb	34 ppb	7.2 ppm	0.8 ppm
	75 As	1 ppb	20.8 ppm	6.1 ppm	19.9 ppm
	82 Se	4 ppb	11 ppb	50 ppb	0.18 ppm
	111 Cd	2 ppb	5 ppb	3 ppb	21 ppb
	118 Sn	0.48 ppm	0.48 ppm	0.44 ppm	0.41 ppm
	202 Hg	29 ppb	41 ppb	72 ppb	65 ppb
	205 Tl	0.3 ppb	0.6 ppm	26.7 ppm	3.4 ppm
	208 Pb	3 ppb	2.1 ppm	41 ppb	1.9 ppm
	238 U	0.2 ppb	2 ppb	0.4 ppb	3 ppb
Notes	Remnants of the Chicken Chasseur meal.				

H5	Part eaten plate of food: metals by
Evidence No.:	10-02-0071-H5 Part eaten plate of food
Test	

Results		*Blank* **w/v**	**H5a potato w/w**	**H5b White sauce w/w**	**H5c Chicken w/w**
	V	6 ppb	8 ppb	70 ppb	90 ppb
	Mn	32 ppb	20 ppb	11.4 ppm	1.2 ppm
	Cu	< 5 ppb	90 ppb	0.4 ppm	0.1 ppm
	Zn	27 ppb	40 ppb	7.2 ppm	0.8 ppm
	As	< 5 ppb	< 5 ppb	10 ppb	2 ppb
	Se	< 5 ppb	10 ppb	50 ppb	0.18 ppm
	Cd	< 5 ppb	< 5 ppb	< 0.5 ppb	20 ppb
	Sn	ND	ND	ND	ND
	Hg	29 ppb	40 ppb	70 ppb	60 ppb
	Tl	< 5 ppb	0.6 ppm	26.7 ppm	3.4 ppm
	Pb	< 5 ppb	2.1 ppm	40 ppb	1.9 ppm
	U	< 5 ppb	< 5 ppb	< 5 ppb	< 5 ppb
Notes	ND = not determined				